BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

CENTRE OF EXCELLENCE

SREE BALAJI DENTAL COLLEGE AND HOSPITAL

Velachery Main Road, Narayanpuram, Pallikaranai, Chennai, India - 600100

A constituent college of Bharath Institute of Higher Education & Research

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

HUMAN GENETICS RESEARCH

SREE BALAJI DENTAL COLLEGE AND HOSPITAL

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HUMAN GENETICS RESEARCH CENTRE

Human Genetics Research Centre (DST-FIST sponsored facility) includes Molecular Genetics Laboratory and Microbial Genetics Laboratory. The centre is fully equipped to enable all the clinicians and student researchers to pursue a real-time research.

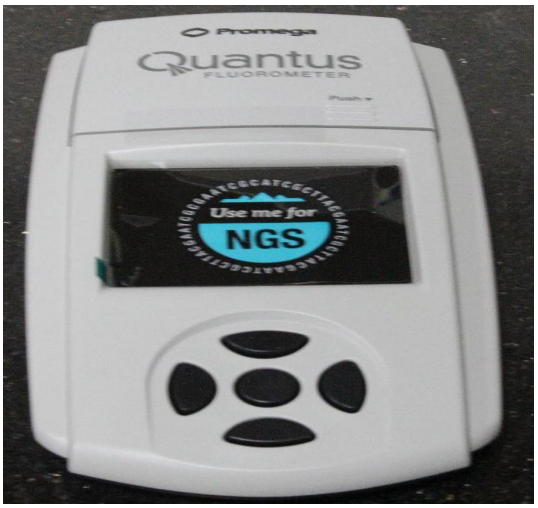
EQUIPMENT DETAILS

1. REAL-TIME PCR

Real-Time PCR is used for the identification, quantification, expression, and genetic variation analysis of desired gene. It monitors the progress of a reaction in real time. At the same time, a relatively small amount of PCR product (DNA, cDNA or RNA) can be quantified. It is based on the detection of the fluorescence produced by a reporter molecule which increases, as the reaction proceeds. This occurs due to the accumulation of PCR products with each cycle of amplification.

2. QUANTUS NANOFLUOROMETER

Fluorometer is used for precise quantitation of biological molecules including nucleic acids and proteins in microliter (µl) samples. It can measure the concentration of double- and single-stranded DNA (dsDNA and ssDNA), ribonucleic acid (RNA), and proteins in solution with demonstrable applications in a range of biochemical fields. Fluorometer also delivers exclusive detection of desirable analytes, eliminating measurement inaccuracies caused by a contaminants or unknown elements in the sample.



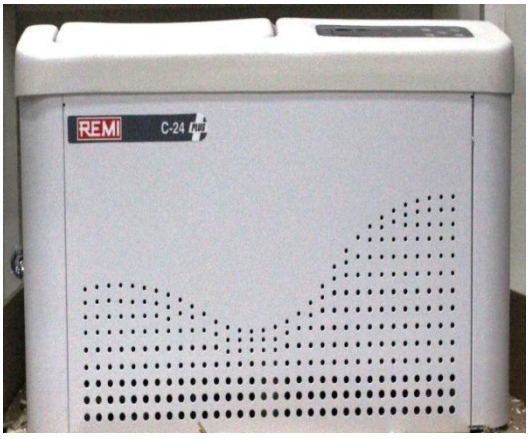
3. SPECTROPHOTOMETER

Spectrophotometer measures the concentration of proteins, nucleic acids, enzymes, growth of bacterial cells. It is an instrument that measures the amount of photons (the intensity of light) absorbed after it passes through sample solution.

4. VERITI PCR THERMAL CYCLER

Gradient PCR is used for identification and amplification of the desired gene. It is a technique that allows the empirical determination of an optimal annealing temperature using the least number of steps. The selection of the annealing temperature is the most critical component for optimizing the specificity of a PCR reaction.

5. THERMO COOLING CENTRIFUGE



Cooling centrifuge pellets the cells in cooling temperature. It has a wide choice of rotor heads and adaptors and this unit is versatile. Refrigerated centrifuge works on the concept of sedimentation principle by holding up the sample tubes with a capacity of 2ml, 10ml and 50ml in rotation around a fixed axis. It also provides temperature control of biomaterial during centrifugation. There is a user-friendly setting of centrifugation parameters- speed, temperature, and time.

6. DEEP FREEZER (-20°C)

Deep freezer is used to preserve and store medical equipments, blood samples, medicines, and injections, etc. for a long period of time.

7. LAMINAR UV HOOD

Laminar flow hood is a carefully enclosed bench designed to prevent contamination of biological samples. Air is drawn through a HEPA filter. It has a UV-C lamp to sterilize the interior and contents before usage to prevent contamination of experiment.

8. ELECTRONIC BALANCE

Electronic balance weighs the chemicals and samples from 1mg to 200g. An analytical balance (often called a "lab balance") is a class of balance designed to measure small mass in the sub-milligram range. The measuring pan of an analytical balance (0.1 mg or better) is inside a transparent enclosure with doors so that dust does not collect and so any air currents in the room do not affect the balance's operation.

9. TRINOCULAR MICROSCOPE

Trinocular microscope visualizes and captures the structure of desired cells. It has two eyepieces like a binocular microscope and an additional third eye tube for connecting a microscope camera. The amount of light provided is ideal allowing the camera a very short exposure time, which in turn ensures that the specimen is seen in real time. This makes photography a lot easier.

10. REFRIGERATOR

Refrigerator stores samples and chemicals. Laboratory refrigerators are used to cool samples or specimens for preservation. They include refrigeration units for storing blood plasma and other blood products, as well as vaccines and other medical or pharmaceutical supplies.

11. ELECTROPORATOR

Electroporator is used to transform DNA into a cell. It is a technique in which an electrical field is applied to cells in order to increase the permeability of the cell membrane, allowing chemicals, drugs, or DNA to be introduced into the cell.

12. GEL DOCUMENTATION SYSTEM

Gel documentation system identifies and asses the Nucleic acids in agarose gels. A gel doc, also known as a gel documentation system, gel image system or gel imager, refers to equipment widely used in molecular biology laboratories for the imaging and documentation of nucleic acid and protein suspended within polyacrylamide or agarose gel. These gels are typically stained with ethidium bromide or other nucleic acid stains such as GelGreen. Generally, a gel doc includes an ultraviolet (UV) light transilluminator, a hood or a darkroom to shield external light sources and protect the user from UV exposure, and a CMOS camera for image capturing.

13. ELECTROPHORESIS

Agarose gel electrophoresis unit: The technique separates a mixed population of macromolecules such as DNA or proteins in a matrix of agarose. Biomolecules are separated by applying an electric field to move the charged molecules through an agarose matrix and the biomolecules are separated by size in the agarose gel matrix.

14. PIPETTES

Pipettes (1 micro litre to 10 ml - handling the liquid samples): It is a laboratory tool commonly used to transport a measured volume of liquid, often as a media dispenser. Pipettes come in several designs for various purposes with differing levels of accuracy and precision.

15. LABORATORY CENTRIFUGE

Laboratory centrifuge is driven by a motor, which spins liquid samples at high speed. It is used for the separation of fluids based on density.

16. REFRIGERATED ORBITAL INCUBATOR

Refrigerated orbital incubator incubates the culture samples at varying temperatures under a built-in orbital shaker.

17. MICROBIAL INCUBATOR

Incubator is a device used to grow and maintain microbiological cultures. The incubator maintains optimal temperature, humidity, and other conditions.

18. ICE FLAKER

Ice formation from **Ice flaker** will be used for temporary storing and processing the samples. It produce hygienic, clear, pure ice ideal for medical and laboratory applications

19. ELISA PLATE READER

Elisa plate reader detects and process biological and chemical data using absorbance (enzyme activity, protein quantification). It uses 96-well plate (8 by 12 matrix) with a typical reaction volume between 100 and 200 µL per well.

LAB HEAD

Dr. Usha Subbiah MSc, PhD.

Professor and Head
Human Genetics Research Centre
Sree Balaji Dental College and Hospital
Pallikaranai, Chennai
Email: ushat75@yahoo.com
Phone: +91- 8248707203

Dr. Usha Subbiah holds a doctoral degree in Genetics in 2006 from Dr ALM PG Institute of Basic Medical Sciences, University of Madras, Chennai, India. She gained more than 4 years of postdoctoral research experience in gene cloning and mutant gene library creation in Orchid Chemical & Pharmaceuticals Ltd, Chennai, India; University of Delaware, USA and in University Of Malaya, Malaysia.

She is currently heading the Human Genetics Research Centre @ SBDCH and is the Principal Investigator for DST-FIST programme to expand the research of college. Her area of research expertise includes Molecular Genetics, Microbial Genetics, Drug-Nucleic Acid Interactions. Her current research interests include, Association of genetic polymorphism, gene expression analysis in oral and dental diseases and disorders, oral microbial plasmid identification to combat microbial resistance with special focus on periodontitis and dental caries.

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

(Accredited with A grade by NAAC)

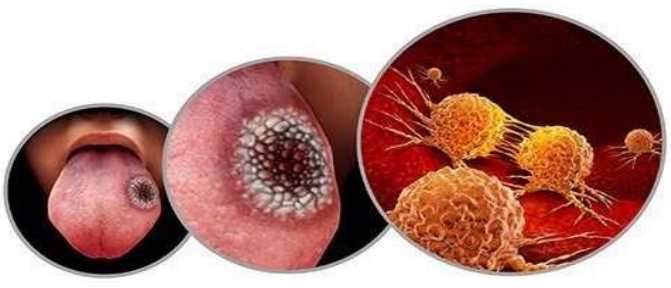
Center for Oral Cancer Prevention, Awareness & Research

COCPAR

Center for Oral Cancer Prevention Awareness and Research

வாய் புற்றுநோய் தடுப்பு விழிப்புணர்வு மற்றும் ஆராய்ச்சி மையம்

(AHEAD TO MAKE CANCER ONLY AS A ZODIAC SIGN IN THE FUTURE)



Dr. S. Jagathrakshakan
Founder Chancellor
Bharath Institute of Higher Education and Research
Chennai, Tamil Nadu-600073

MESSAGE

Bharath Institute of Higher Education and Research (BIHER), Chennai, is a Self-Financing, Deemed to be University recognized by MHRD in July 2002, under section 3 of the UGC Act 1956, comprising seven Institutions including Bharath Institute of Science and Technology, started in Tamil Nadu in 1984 by Sri Lakshmi Ammal Educational Trust. The Bharath Institute of Science and Technology (BIST) and other institutions such as Bharath Institute of Science and Technology, Sree Balaji College of Nursing, Chennai, Sree Balaji Medical College and Hospital (SBMCH), Chennai, Sree Balaji College of Physiotherapy, Chennai and Sri Lakshmi Narayana Institute of Medical Sciences (SLIMS), Pudhucherry was then brought under the ambit of Bharath Institute of Higher Education and Research (BIHER).

Centre of Excellence has been established at our campus with the aim to bring together the prominent researchers in India and enable them to network globally to discourse problems of national purpose and work towards solutions through science and technology. It could be a declaration that the Centre of Excellence will endeavour constantly to provide the resources and motivation needed for prospering of research. This Centre will be a supreme resource to the nation and to the world.

I wish the Centre all success.

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SREE BALAJI DENTAL COLLEGE & HOSPITAL

Velachery Main Rd, VGP Rajesh Nagar,
Pallikaranai, Chennai, Tamil Nadu 600100, India

Phone: +91 44 22462179

COCPAR-BIHER

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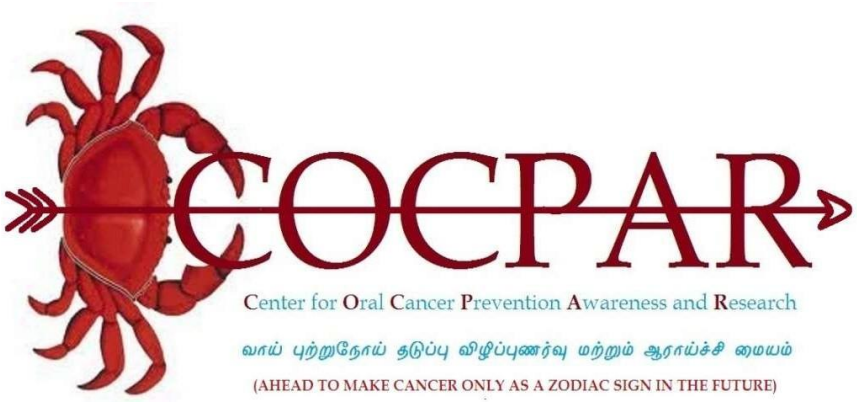
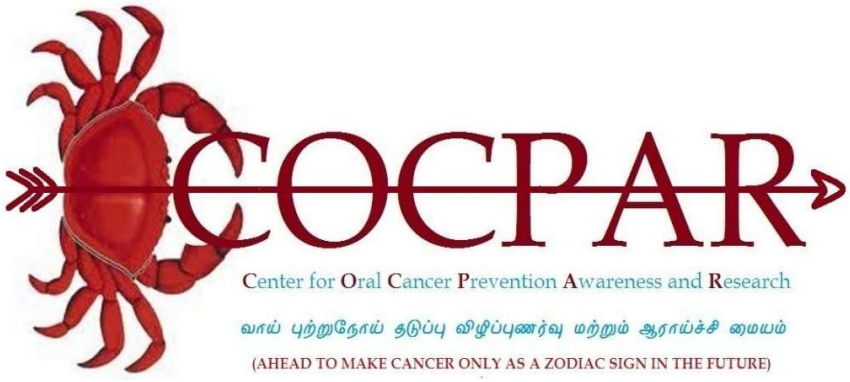


VISION

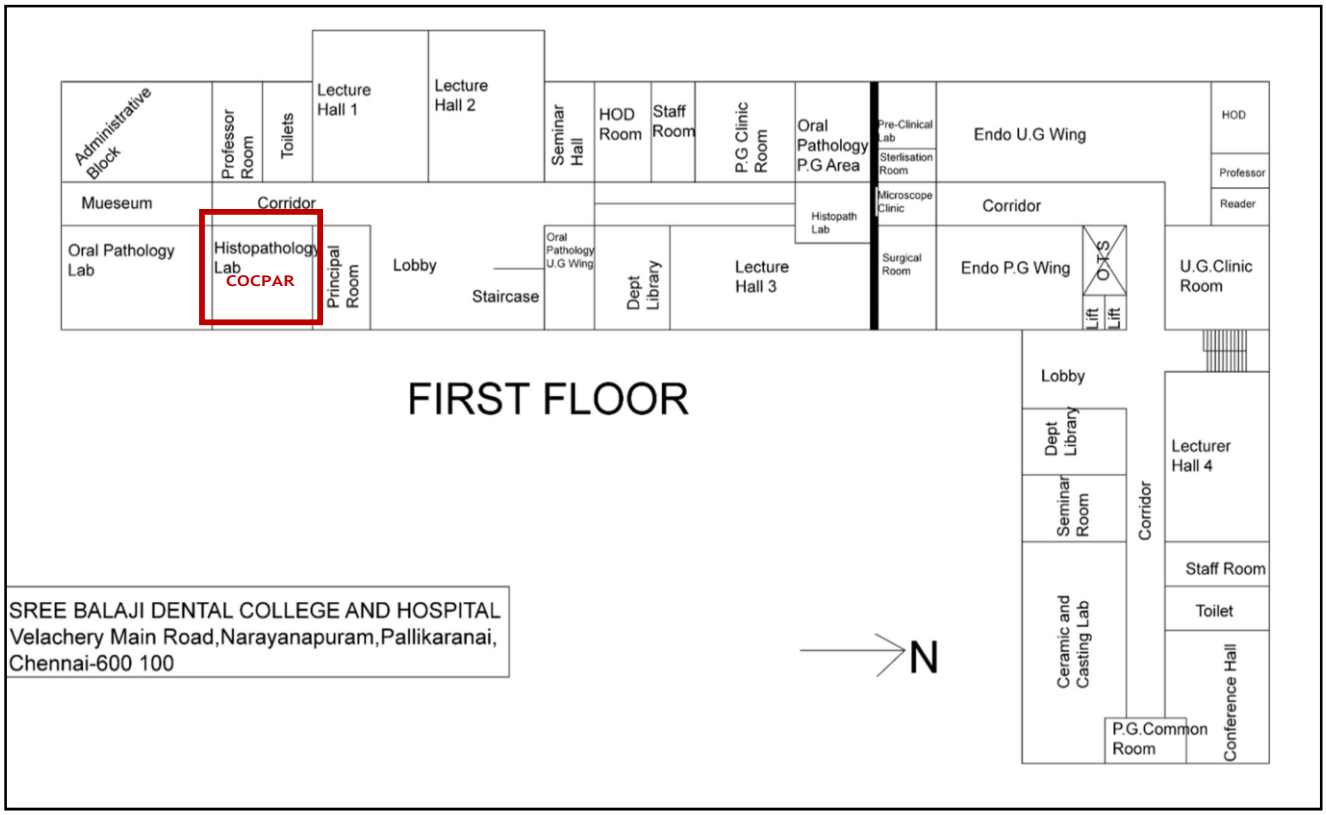
- **To develop as a centre with state of art facility and cutting edge technology dedicated to research in oral cancer and potentially malignant disorders.**
- **To develop our centre as a major centre for oral cancer awareness, tobacco cessation counselling.**
- **To develop as a centre for oral cancer screening, diagnosis and preventive treatment.**



MISSION

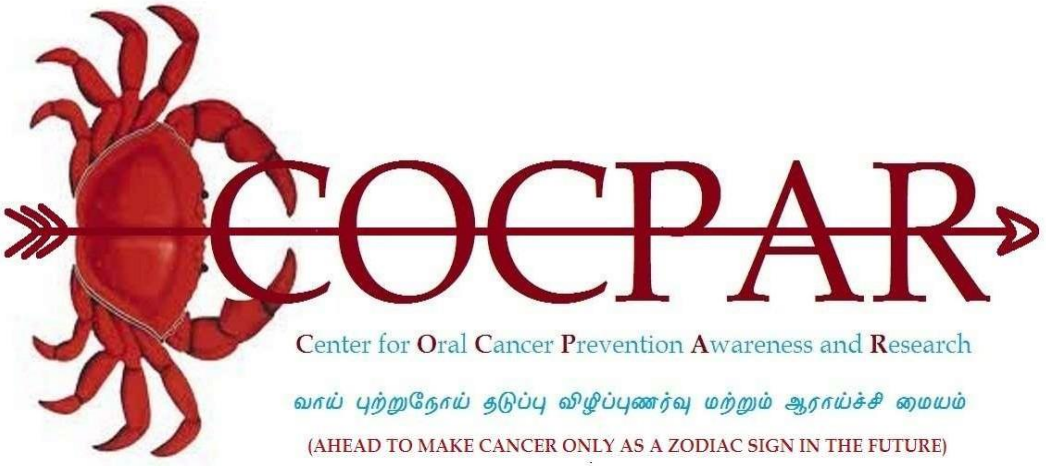
- **To develop a sensitive, rapid and cost effective aid for the diagnosis of Oral Potentially malignant disorder and Oral Cancer.**
- **To develop a sensitive, rapid cost effective aid to determine the transformation potential of oral pre - malignancy and prognosis of oral cancer.**
- **To determine the role of oncogenic viruses in oral cancer patients without habits.**
- **To develop markers for the targeted therapy in potentially malignant disorder and Oral Cancer.**
- **To determine the sensitive markers to detect the probability of developing cancer in patients with habit and without disease as well as in patients with the family history.**

FLOOR PLAN OF THE R & D UNIT



PHOTOGRAPHS OF THE R & D UNIT

COCPAR-BIHER



Oral Cancer is the second most common cancer among males and 4th most common cancer among females with mortality rate of 9.7% among males and 5.3% among females. It also causes the intense morbidity, changing the complete life styles of the patient and their family. It causes the enormous financial burden to the family and to the community and to the country. It is very important to prevent this menace, educate the patients regarding this disease and carry out research to improve the survival of these patients.

COCPAR - Structure & Operation

Director	**: Prof. (Dr.) K.M.K. Masthan, M.D.S**
Joint-Director	**: Prof.(Dr.) Aravindha Babu. N, M.D.S; FICD (USA)**
Principal Investigator	**: Dr. Vidya Rani, M.D.S**
Research associate	**: Dr. S. Karthika Nagarajan, M.D.S**
Epidemiologist	**: Dr. Krishna Prasad, BDS, M.Sc**
Technical assistant	**: Mr. Senthil, Bsc (MLT)**

Email: cocparbiher@gmail.com

Ph: 04422461883; extn 27,62

COCPAR STAFFS

Prof. Dr. KMKMasthan

Administrator

Prof. Dr.Aravindha Babu

Co-administrator

Dr. Vidyarani

Principal investigator

Dr. Krishnaprasanth

Research Scholar

Dr. Karthika Nagarajan

Research Scholar

Mr. Senthil B.Sc; D.M.L.T – Technical Assistant

Advisors/ Emeritus Professors/Adjunct Professors

Advisors:

Dr. R.Vijayalakshmi. M.Sc., Ph.D., (Molecular Oncology)

Dept of preventive Oncology(Research Div)

Cancer Institute(WIA), Adyar, Chennai, India

Prof. Dr.Karunakaran D

Cancer Biology

Indian Institute of Technology (IIT - MADRAS)

Chennai, T.N, India

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Dr. R. Rajendran, MDS, PhD, FRCPath (UK)

Divn. Oral Pathology, College of Dentistry

National Guard Health Affairs (NGHA)

Riyadh – 11426, KSA

Dr. K. Shyam Sundar. MBBS, MS, MCh, Fellow of neurosurgery(Australia)

Consultant Neurosurgeon,

Voluntary Health Services, Chennai

Special interests: Skull base, cerebrovascular, epilepsy,

spine and endoscopic surgery

Adjunct professorship:

Dr. AppuRathinavelu, Ph.D.

Executive Director, Rumbaugh-Goodwin Institute for Cancer Research
Nova Southeastern University (NSU) Florida, USA

Dr. David J. Speicher B.Sc (CAN); M.Sc (AUS); Ph.D (AUS)
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Griffith University,
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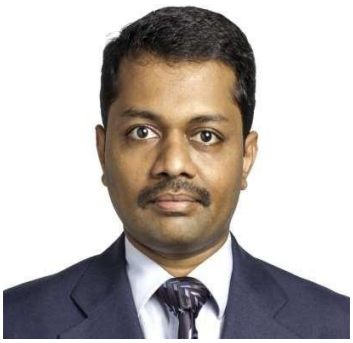
Adjunct professorship:



Dr. Nagarajan Manickaraj, B.P.T; M.P.T;, Ph.D
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Former Head of Program, Faculty of Physiotherapy, INTI college, Malaysia

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Dr. P. Navina B.Sc; M.Sc; Ph.D

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E-mail : navinapanneerselvan@yahoo.com

Advisor:

Dr. SavithriShivakumar Ph.D.

Founder and Executive Director,
Aaranya Biosciences pvt. ltd,
Chennai, India

COLLABORATIONS, MoUs and Letter of Supports

SL.NO	Number of foreign collaborators/ MoUs	year	Type of association	Features of Collaboration/ MoU
1.	Cancer Institute, Adyar	2013	Collaboration	Research support
2.	Griffith University	2015	Collaboration	Research support
3.	Nova Southeastern University	2015	Collaboration/MoU	Research support
4.	Captain Srinivasamoorthy College of Siddha and Ayurvedha Drug Development, AYUSH	2015	Collaboration	Research support
5.	Tamil Nadu Dr. M.G.R Medical University	2015	Collaboration	Research support
6.	Buddha Institute of Dental Sciences and Hospitals	2015	MoU	Research Support
7.	Dr.MGR Educational and Research Institute(University)	2017	Collaboration	Research Support
8.	Karunya University, Coimbatore	2017	Collaboration	Research Support
9.	Aaranya Biosciences	2017	Collaboration	Research Support
10.	MAHSA University, Malaysia	2021	MoA	Research Support, Faculty exchange
11.	MIOT Hospitals	2016	MoU	Patient Referral, Cost subsidy, Staff concession
12.	HCG	2016	MoU	Patient Referral, Cost subsidy
13.	Gleneagles Global Hospitals	2017	MoU	Patient Referral, Cost subsidy
14.	VS Hospitals	2017	MoU	Patient Referral, Cost subsidy
15.	Apollo Proton	2020	MoU	Patient Referral, Cost subsidy

CONSULTANCIES

SL.NO	Title of the Project	Year	Collaborating Institute	Faculty concerned	Name of Investigators and Staff	Total Budget	Venue
1.	Immunohistochemistry studies on expression of Oral Cancer gene markers on hamster tissues.	2017	Karunya University	Dr.Narendra Kannan	Dr. Vidyarani Shyamsundar Ms. Ishwarya	1,00,000	https://sbdch.ac.in/research-excellence.php
2.	P16 and P53 expressions in Oral Cancer, Potentially malignant disorders in tissue samples	2017	Dr.MGR Educational and Research Institute	Dr.Sudhakar N	Dr. Vidyarani Shyamsundar Ms. Jayalalitha	50,000	https://sbdch.ac.in/research-excellence.php
3.	C-kit, PD1, C-myc expressions in serum and tissue samples of Oral Potentially malignant disorders and Oral Cancer.	2017	Dr.MGR Educational and Research Institute	Dr.Sudhakar N	Dr. Vidyarani Shyamsundar Ms. Jayalalitha	60,000	https://sbdch.ac.in/research-excellence.php
4.	Overexpression of BAX, FAS and BCL2 in Oral Cancer and Normal	2017	Dr.MGR Educational and Research Institute	Dr.Sudhakar N	Dr. Vidyarani Shyamsundar Ms. Jayalalitha	70,000	https://sbdch.ac.in/research-excellence.php
5.	Expression of BMP and CASP 8 in Normal and Diabetic patients	2017	Dept of Biochemistry, VRR Institute	Dr. Shila	Dr. Vidyarani Shyamsundar Mrs. Mathangi (Dept of Biochemistry, BIHER	2,00,000	https://sbdch.ac.in/research-excellence.php
6.	Expression of MMP 9, Cyclin D1, P53, p16, E cadherin in Oral Cancer, and its significance in survival	2017	Cancer Institute(WIA) Adyar	Dr. Vijayalakshmi	Dr. Vidyarani Shyamsundar Ms. Viveka (Cancer Institute(WIA) Adyar)	6,00,000	https://sbdch.ac.in/research-excellence.php
						TOTAL Rs.10,80,000/-	

SL. NO	Title of the Project	Year	Name of Trainee and Collaborating Institute	Number of trainees	Name of Investigators and Staff	Total Budget	Venue
1.	Histopathology and Tissue processing	2017	Aasan Memorial College of Arts & Science	70	Dr. Vidyarani	**0**	https://sbdch.ac.in/research-excellence.php
2.	Histopathology and Tissue processing	2017	SSN engineering College	97	Dr. Vidyarani	**0**	https://sbdch.ac.in/research-excellence.php
3.	Histopathology and Tissue processing	2017	Jeruselem Engineering College	98	Dr. Vidyarani	**0**	https://sbdch.ac.in/research-excellence.php
4.	Histopathology and Tissue processing	2018	Aasan Memorial College of Arts & Science	88	Dr. Vidyarani	**0**	https://sbdch.ac.in/research-excellence.php
5.	Histopathology and Tissue processing	2019	Jeruselem Engineering College	95	Dr. Karthika Nagarajan	**0**	https://sbdch.ac.in/research-excellence.php
6.	Immuno Histochemistry	2019	Dr. Priyadharani, Cancer Institute	**1**	Dr. Vidyarani	10,000	https://sbdch.ac.in/research-excellence.php
7.	Immuno Histochemistry	2019	Dr. Anitha .V, Cancer Institute	**1**	Dr. Vidyarani	10,000	https://sbdch.ac.in/research-excellence.php
8.	Immuno Histochemistry	2018	Dr. Dhanaswathi, Cancer Institute	**1**	Dr. Vidyarani	20,000	https://sbdch.ac.in/research-excellence.php
9.	Immuno Histochemistry	2018	Dr. Gita Krishna P, MCODS Manipal	**1**	Dr. Vidyarani	15,000	https://sbdch.ac.in/research-excellence.php
10.	Immuno Histochemistry	2017	Ms. Ishwarya, Karunya University	**1**	Dr. Vidyarani	15,000	https://sbdch.ac.in/research-excellence.php

11.	Immuno Histochemistry	2017	Ms. Blessey George, Loyola College	1	Dr. Vidyarani	15,000	https://sbdch.ac.in/research-excellence.php
12.	Immuno Histochemistry	2017	Mr. Rishwanth R, University of Madras	1	Dr. Vidyarani	15,000	https://sbdch.ac.in/research-excellence.php
13.	Immuno Histochemistry	2016	Ms. Srinithi D, St. Joseph College of Engineering	1	Dr. Vidyarani	15,000	https://sbdch.ac.in/research-excellence.php
14.	Immuno Histochemistry	2016	Ms. Varsha R, St. Jospeh College of Engineering	1	Dr. Vidyarani	30,000	https://sbdch.ac.in/research-excellence.php
15.	Immuno Histochemistry	2016	Ms. Shivani K, BS Abdur Rahman University	1	Dr. Vidyarani	30,000	https://sbdch.ac.in/research-excellence.php
16.	Immuno Histochemistry	2016	Ms. Rukhmani N, Rajalakshmi Engineering College	**1**	Dr. Vidyarani	15,000	https://sbdch.ac.in/research-excellence.php
17.	Immuno Histochemistry	2016	Ms. Srisruthi S, Rajalakshmi Engineering College	**1**	Dr. Vidyarani	15,000	https://sbdch.ac.in/research-excellence.php
18.	Immuno Histochemistry	2015	Dr. N. Malathi, Sri Ramachandra University	**1**	Dr. Vidyarani	12,500	https://sbdch.ac.in/research-excellence.php
19.	Immuno Histochemistry	2015	Ms. Prithvika K, Sastra University	**1**	Dr. Vidyarani	15,000	https://sbdch.ac.in/research-excellence.php
20.	Immuno Histochemistry	2015	Ms. Evangeline Celsia.S, Karunya University	**1**	Dr. Vidyarani	10,000	https://sbdch.ac.in/research-excellence.php
21.	Immuno Histochemistry	2015	Ms Banu Deepthi V, University of Madras	**1**	Dr. Vidyarani	12,500	https://sbdch.ac.in/research-excellence.php

22.	Immuno Histochemistry	2015	Ms. Akila Balasubramanian, SRM University	**1**	Dr. Vidyarani	12,500	**https://sbdch.ac.in/research-excellence.php**
						TOTAL	**Rs.2,72,500/-**

ALUMI PLACEMENTS

PLACEMENTS OF INTERN STUDENTS IN 2016. 2019

1. Blessy George (2017) – Internship in Tissue Processing & IHC Technique – EURASIA HOSPITAL, Bangalore

2. Akila (2016) USA – Internship in IHC – BAYER COLLEGE OF MEDICINE

3. Varsha, Srinithi (2017) – Internship in IHC – SAVEETHA MEDICAL COLLEGE

4. Dr Jayalalitha - Research Scientist in Reagene Biosciences,Hyderabad

KEY CONSULTANCIES FROM:

RESEARCH AND ACADEMIC COLLABORATIONS:

INTERNATIONAL RESEARCH COLLABORATORS

HOSPITALAND ACADEMIC COLLABORATORS:

COCPAR-BITER

FUTURE PLANS

Future Plans

- To attract more external funds to continue research in Tobacco cessation and HIV related Oral Malignancies.
- Studies on epigenetic changes, along with determination SNPs in a larger cohort and as a multicentre studies involving both oral cancer and pre cancers by applying for funding from reputed government funding agencies like DST,DBT or ICMR.
- Planning to design a cost effective, rapid diagnostic and prognostic aid using advanced technology based on our molecular work.
- Continuation of Oral Screening and cancer awareness camps.
- Planning to do epidemiological studies on physically challenged children in relation to Oral Diseases.
- Planning to initiate fellowship programmes and diploma courses in Oral Oncology

Social Impact of Our Research

- Early detection of the oral cancer and awareness for oral cancer as well as tobacco habits.
- If we are successful in precise detection of epigenetic changes during different stages of carcinogenesis, the risk of malignant transformation and prognosis of oral cancer patients can be detected by using cells or saliva without invasive biopsy. This we are designing to be cost effective and rapid molecular technique.
- If we are successful in our efforts we can try to use targeted therapy to prevent malignant transformation of dysplastic lesion and oral cancer therapy.
- Providing mass screening for physically challenged children and further management for the underpriveledged.

IN FUTURE LET

CANCER

BE A ZODIAC SIGN ONLY

COCPAR-BIHER

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

Research Laboratory for Oral - Systemic Health

SREE BALAJI DENTAL COLLEGE AND HOSPITAL

Velachery Main Road, Narayanpuram, Pallikaranai, Chennai, India - 600100

A constituent college of Bharath Institute of Higher Education & Research

Research Laboratory for Oral - Systemic Health / Department of Microbiology, SBDCH

Research Laboratory for Oral-Systemic Health

• A new paradigm between dentistry and medicine is now developing regarding patient care. As the oral systemic connection is more evidently understood, dentists diagnosing oral and periodontal disease will play a greater role in the overall health of their patients. Many times, the first signs of unnatural systemic health conditions reveal themselves in changes within the oral cavity.

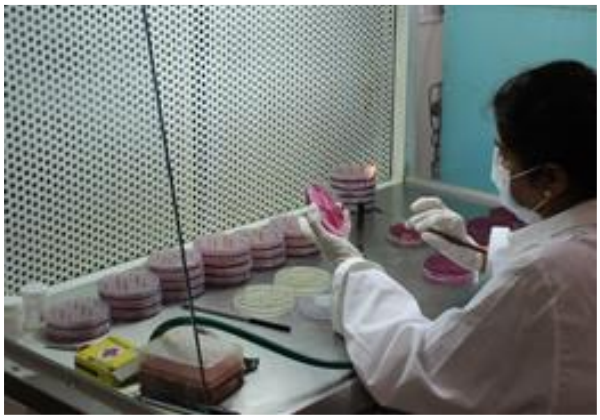
Vision

• The research laboratory for Oral-systemic health aims to research the direct link between oral microbiome to varied systemic diseases.

Mission

• The research laboratory will aim to achieve excellence by promoting Quality Research, Knowledge and collaboration.

AEROBIC CULTURE:



This Research equipped with laboratory is well bacterial and fungal culture facilities that remains the gold standard in microbiological analysis. Our faculty have the expertise in the study of endodontic microflora in health and disease.

Culture-based methods still remain mandatory in this genomic era for detection and enumeration, to determine viability, and to validate phenotype predictions made on the basis of genomic analysis.

Culture techniques provide insights into the nature and behaviour of bacteria & fungi in in vitro, ex vivo and in vivo environments within the oral cavity and the root canal.

ANAEROBIC CULTURE

Anaerobic culture though technically exacting and cumbersome provides details of the actual bacterial flora in the oral niche especially the subgingival plaque and gingival crevicular fluid (GCF). As many of the oral flora are obligate anaerobes that could not be retrieved in normal culture methods, anaerobic culture remains the corner stone.

PCR- Eppendorf Mastercycler personal

- Polymerase Chain Reaction (PCR) has become a routine standard diagnostic tool in the field of dentistry. PCR enables the accurate diagnosis of the etiology of maxillofacial infections.
- This technique plays a crucial role in the effective management of periodontal disease, caries, endodontic infections and oral cancer.
- It also has an array of applications in dental research, especially with regard to the oral microbiome analysis.
- Polymerase chain reaction (PCR) has led the way into this new genomic era by making possible the impossible- Rapid detection of dental microflora that are uncultivable by the traditional microbiological methods.
- Molecular methods have surpassed mere identification of the etiology to detection of antimicrobial resistance genes, species specific amplification of DNA segments between interspersed-repeat elements, gene expression studies and strain typing.

Photomicrography-

Trinocular microscope with a Plug and play MagCam DC 5 camera for high quality images – Microbiology, Pathology & Research applications.

MagCam DC5 - Digital Camera with Next Generation CMOS Sensor that is

•Ideal for routine brightfield applications

• USB 2.0 Interface

• Advanced image processing software- MagVision - an advanced Image processing and documentation software

• Compatible with Windows/Linux/Mac

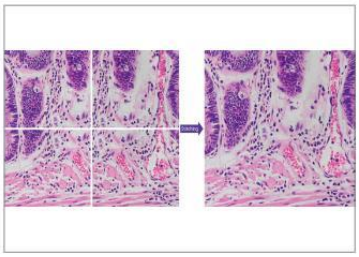
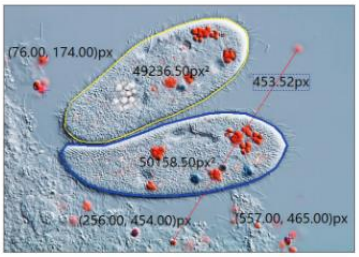
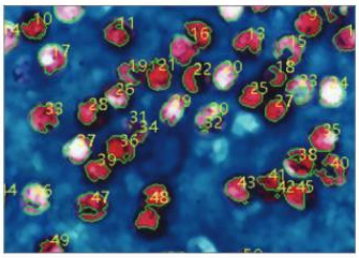


Image Stitching



Measurement

Extended Depth of Field (EDOF)



Segmentation and Count

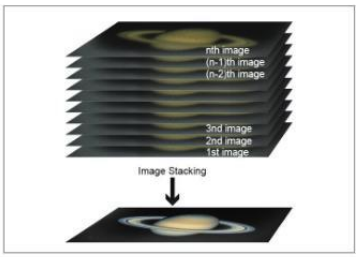
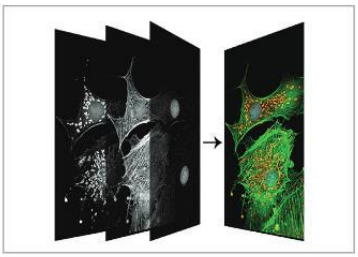
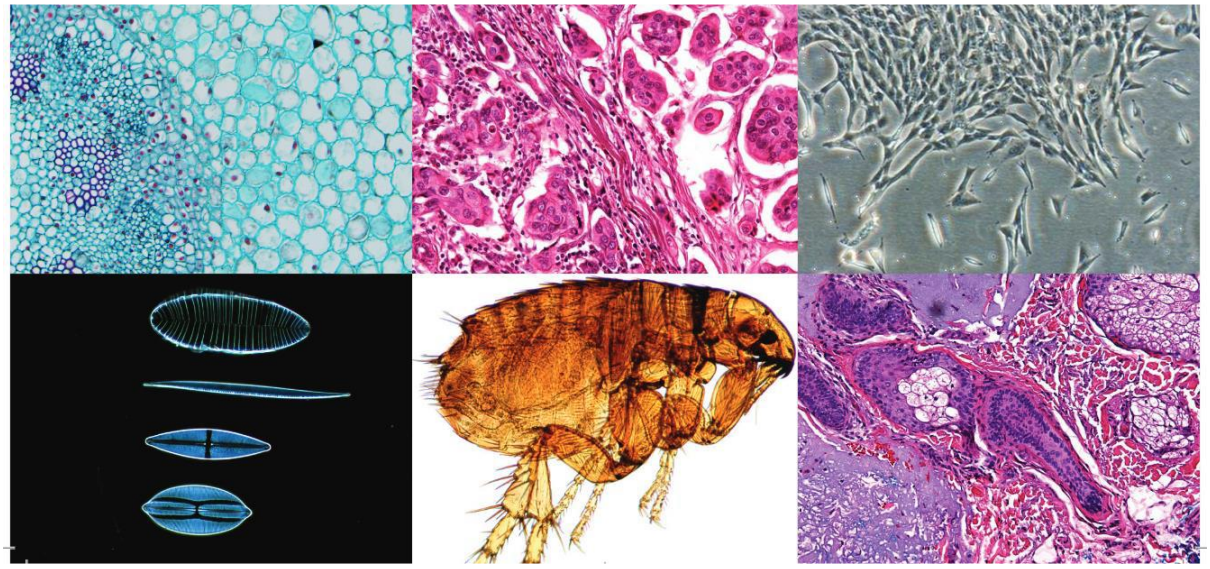


Image stacking



Color composite



Research Team

1. Dr. K. Mahalakshmi - Director.

2. Dr. K. Padmavathy - Co-Director.

The faculty of the Department of Microbiology is actively involved in research in collaboration with the faculty of dentistry in a truly interdisciplinary approach.

Staff profile

Dr. K. Mahalakshmi, PhD.

• Director, Research Laboratory for Oral Systemic Health

• Professor and Head, Department of Microbiology,

Sree Balaji Dental College and Hospital, BIHER, Chennai.

• E mail: mahalakshmi.sbdch@bharathuniv.ac.in

• Phone: +91- 9444184403

• Dr. K. Mahalakshmi is a medical Microbiologist. She is currently heading the Department of Microbiology, Sree Balaji Dental College and Hospital. She has 30 years of teaching experience and 16 years of research experience. Her interest is in the branch of Oral Microbiology/ infectious disease and her main research focus is on Oral Microbiome in health and disease.

Staff profile

Dr. K. Padmavathy, PhD.

• Co-Director, Research Laboratory for Oral Systemic health

• Professor, Department of Microbiology,

Sree Balaji Dental College and Hospital, BIHER, Chennai.

• Email: Padmavathy.pmb@sbdch.bharathuniv.ac.in

• Phone: +91- 9884164212

• Dr. K. Padmavathy is a medical Microbiologist.

She has a research experience of 15 years and a teaching experience of 21 years. Her areas of research interests include, infectious diseases, antimicrobial resistance, oral microbiology. Her key research focus is on bacterial drug resistance.

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

Cleft and Craniofacial Research center

SREE BALAJI DENTAL COLLEGE AND HOSPITAL

Velachery Main Road, Narayanpuram, Pallikaranai, Chennai, India - 600100

A constituent college of Bharath Institute of Higher Education & Research

The Cleft and Craniofacial Research center is one of the best cleft research centers in India. It has several real-world impact studies which aim to answer some of the most pressing questions not only in cleft but also in orthodontics and surgical areas. The center has world-class researchers who have a keen interest in improving patients' quality of life.

Cleft lip and palate (CLP) are among the most common congenital malformations with an overall incidence of around 1 in 700 newborns, and as a result, between 27,000 and 33,000 children in India are born with clefts every year. CLP is accompanied by a wide variety of dental and skeletal anomalies, which have a long-term impact on the patient’s facial aesthetics, function, and self-esteem. The care for these children is marked by controversies with multiple protocols concerning treatment. Additionally, the care for this group of children is being delivered in a fragmented way through several centers in India. It has been reported that a total of 79,430 cleft patients had unmet treatment needs which accounted for 18.76% of the total Indian cleft population.

Our research activity includes the Cleft Care India Study The center is therefore determined to identify the needs, improve the quality of care, and support patients in every possible way. Our work targets not just the local population but nationally and globally. We are currently working on a national audit on cleft management protocols practiced, evaluating around 150 cleft centers across India. This would be followed up by evaluating the outcomes from these centers and helping them develop a common protocol that would improve the overall quality and at the same time reduce the burden of care for these children.

Randomised Controlled Trials:

At the Cleft and Craniofacial Research center, we carry out high-quality Randomised Controlled Trials for solving the most important problems. We are currently working on three multicentric RCTs of which two are funded.

Reducing the burden of orthodontic care for children with clefts: Evaluating the effectiveness of pre-alveolar bone graft orthodontics in unilateral non-syndromic cleft patients (PABO Study)

Alveolar Bone Graft research:

Cleft patients have multiple courses of orthodontic treatment with small periods of time between each course of treatment. Occasionally, these courses of treatment can “run into” each other over a period of many years. As a result, for most children, there is a considerable burden, in terms of wearing visible orthodontic appliances, the need to modify their diet to prevent damage to their brace, and multiple clinic attendances over a long period. Furthermore, they have to undergo orthodontic treatment at an earlier age than their peers and may feel “set apart” from their friends and classmates. The diversity of opinion of the orthodontists as to the need for pre-alveolar bone graft orthodontic treatment suggests that it may be unnecessary for a significant proportion of patients. The evidence underpinning pre-bone graft orthodontics is weak, there being no prospective trials or other formal studies. The multi-centric Randomised Controlled Trial at Cleft and Craniofacial Research center to answer the above dilemma is currently in progress. The project is funded by the Science and Engineering Research Board, Government of India. The results from this RCT will change clinical practice worldwide.

The nasolaveolar molding treatment is a nonsurgical orthopedic treatment for children with unilateral or bilateral cleft, usually performed between 1 and 5 months of age to

improve the position of the premaxilla and to reduce the cleft prior to lip surgery. The treatment attempts to reposition the nasolabial and maxillary segments closer to each other. In this technique, a nasal stent is attached to the intra-oral plate, with lip tapes to secure the appliance in the mouth (Figure 2).

We are also in the process of developing a world-class Clinical Trials Unit to support researchers across India on infrastructure, workforce, and expertise. This will be a platform for young and experienced researchers to become national and world leaders in research.

The Clinical Trials Unit will aim to carry out challenging and innovative studies, that will effectively translate to patient benefit. The center will be at the forefront of solving important questions in cleft, orthodontics, and other areas in dentistry, delivering high-quality research that will be effectively transformed into clinical care.

Workshops conducted

- Cleft Care India Study workshop

The workshop in Delhi in collaboration with University of Manchester Jonathan Sandy, Professor in orthodontics, Bristol. and Jamia Millia Islamia Dental College, A Centralized Government University, aimed at training the task force in the collection of standardized records for evaluation of primary and secondary outcomes. The workshop also involved a calibration course for the assessors for the 5-year-old index and GOSLON yardstick. This trained them in collecting and evaluating records at important stages in the future. They were trained about the significance of taking records at well-defined stages. The second workshop would post analyzing the results where the lacunae in the current standard of care would be analyzed and strategies to resolve the issues would be formulated. Further, we can have more workshops and courses disseminating this information and teaching the postgraduates.

- A Structured Single day workshop on Research methodology By Dr. Stephen Chadwhick (UK) and Dr. Badri Thiruvenkatachari

Grants

1. DST-SERB, Core Research grant on the topic Reducing the burden of orthodontic care for children with clefts: Evaluating the effectiveness of pre-alveolar bone graft orthodontics in unilateral non-syndromic cleft patients (PABO Study). – Rs 35,00,000 Lakhs INR.
2. India Allianz- Naso-alveolar Moulding study – Rs 4.98 Crore INR.
3. Radbound – Transforming faces Grant – Rs 20 Lakhs

Collaborations National and Inter-National

- Jamia Millia Islamia Dental College – A Central Government Institute
- Sri Ramachandra University, Chennai
- Pushpagiri College of Dental Sciences, Kerala
- S.R.M Dental college and Hospital, Kattankulathur, Chennai
- Indira Gandhi College of Dental Sciences, Puducherry.
- Ragas Dental College and Hospital, Chennai.
- University of Manchester
- University of Leeds
- Wellcome Trust, UK
- Great Ormond Street, London
- Chesterfield Royal Hospital NHS trust

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

E-ARC - Edentulism & Anodontia Research Centre

SREE BALAJI DENTAL COLLEGE AND HOSPITAL

Velachery Main Road, Narayanpuram, Pallikaranai, Chennai, India - 600100

A constituent college of Bharath Institute of Higher Education & Research

E-ARC - Edentulism & Anodontia Research Centre

From the Director's Desk, E – ARC.

It gives me immense pleasure in introducing our Research centre, since February 2012. On the onset I would like to briefly mention the Vision and Mission of research centre.

- **Vision:**

The vision of E-ARC as an organized research unit is to become the preeminent dental rehabilitation research centre by fostering excellence in Prosthodontic research, training and public education.

Mission:

1) To study the basic mechanisms of sequel of tooth loss,

2) To study the cause and effect of tooth loss, the diagnostic and treatment modalities,

3) To perform original research, which will improve the ability to understand, recognizeand treat the various edentulous situations.

4) To conduct several continuing dental education programmes for the researchscholars, the scientific community, and for post-graduate students in the dentalfraternity.

Details of the Research Centre:

The e-arc Research centre was conceptualised in 2010. A study on the prevalence of edentulism was started in Dec 2011. The formal inauguration of the Research Centre was on 15th Feb 2012 which was in conjunction with a CDE program on implants.

The E-ARC aims to support a wide range of clinical research projects with emphasis on new therapies and diagnostic intervention for the treatment of tooth loss and subsequent functional deficit. The centre operates under the ethical guidelines for good clinical practice to increase the interest by dental professionals and the post-graduate students to conduct dental clinical researchin the campus.

This centre is comprised of research scholars who are trained in various arenas of prosthodontics, among other disciplines. The Centre also enrols Ph.D. scholars, and trains future academic dentists for dental school faculties.

E- ARC TEAM

Director- Dr. Sanjna Nayar

Co- Director - Dr. S. Bhuminathan

Assistant Director- Dr. Ganesh. R

Members–Dr. Sreedevi V, Dr.Vikram V, Dr. Ramyaa D

Epidemiologist- Dr. Sivakumar M.

Advisors-

1. Prof. Dr. Raghavendra Jayesh, Principal, Sree Balaji Dental College & Hospital
2. Dr. Swaminathan Sethu, Scientist-Immunology, GROW Research Lab, Narayana Nethralaya Foundation, Bangalore, India
3. Dr. Julius, HOD, Department of Biochemistry, Sree Balaji Dental College and Hospital

BHARATH INSTITUTE OF HIGHER EDUCATION AND RESEARCH

Sree Balaji Biomedical Innovation Incubation Centre (SBBIIC)

SREE BALAJI DENTAL COLLEGE AND HOSPITAL

Velachery Main Road, Narayanpuram, Pallikaranai, Chennai, India - 600100

A constituent college of Bharath Institute of Higher Education & Research

Sree Balaji Biomedical Innovation Incubation Centre (SBBIIC)

Sree Balaji Dental College and Hospital, Chennai-6000100

Bharath Institute of Higher Education and Research

Bio-incubation centre caters high end infrastructure, mentors from varied expertise and networking platforms to allow hitching of the entrepreneurial potential of startups. The incubation centre would support and motivate innovative technology based start-ups that are application oriented. The incubation centre would provide the start-ups with proper guidance, tech support, infrastructure, access to investors and networking. The incubation centre inspires the students and faculty members with innovations to product development. This Bio- incubation centre (Sree Balaji Biomedical Innovation Incubation Centre) was inaugurated on 10th June 2022 by **Dr. Andrew I Edwards, Dean, Vice president, Royal college of Physicians & Surgeons, Glasgow. Dr. V. Naveen Kumar**, **Founder & Managing Director, IMMUGENIX BIOSCIENCES PVT LTD**, Chennai highlighted and elaborated on the translational research to kindle the young minds and the faculties to translate their innovative ideas for product development.